

REMARKS

Applicants respectfully appreciate the consideration the Examiner has shown in the November 14, 2003 Office Action. In that Office Action, the Examiner rejected Claims 24-35 and 37-40. Claims 24-35 and 37-40 remain in the case. Applicants have amended claims 38-40 to reflect correct numerical dependency from the appropriate claim, and to clarify matters to facilitate prosecution. The amendments are expressly not for reasons related to patentability but to correct superficial typographical error and clarify matters.

The November 14, 2003, Office Action has been carefully considered. Applicants respectfully request reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered.

NON-OBVIOUSNESS UNDER 35 U.S.C. §103(A)

To establish a prima facie case of obviousness, the MPEP explicitly *requires* the Examiner to demonstrate all the following three criteria. First, there *must* be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine to the reference teachings. Second, there *must* be a reasonable expectation of success. Finally, the prior art reference (or references when combined) *must* teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 -§ 2143.03 .

“The initial *burden is on the examiner* to provide some suggestion or motivation to modify.” Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985); See MPEP § 2144 -§ 2144. When the motivation to combine the teachings of the references is not immediately apparent, it is the *duty of the examiner* to explain why the combination of the teachings is proper.

No Motivation to modify or any reasonable expectation of success in modifying EP 887110 to comprise *multiple plasma sources* in view of Chan, a *physical vapor deposition* reference.

The Examiner rejected Claims 24-35 and claims 37-40 under 35 U.S.C. §103(a) as allegedly obvious over 'EP 887110 in view of Chan et al. (U.S. Patent 5,441,624).

Regarding EP887110, the Examiner admitted that EP887110 fails to disclose *multiple plasma sources*. (11/4/2003 Office Action page 4). Regarding Chan, Chan only discloses *physical vapor deposition process (PVD)*; Chan does not disclose *chemical vapor deposition (CVD)*. (Col. 1, line 20). *PVD* is generally understood as vaporizing either a solid or liquid target to produce a coating on a substrate wherein the coating has substantially the same composition as the target. (HANDBOOK OF DEPOSITION TECHNOLOGIES FOR FILM AND COATING Second Edition, edited by Rointain F. Bunshah, Noyes Publications Westward, New Jersey 1994, p. 6-9). Chan teaches this *PVD* process (Col. 1 line 20-45). In contrast to *PVD*, plasma enhanced *CVD* is generally understood as reacting a gaseous precursor in the presence of a plasma to deposit a coating on a substrate wherein the coating does not have the same composition as the precursor.

Nonetheless, the Examiner merely alleged "it would have been obvious" to modify EP 887110, which fails to disclose *multiple plasma sources*, in view of Chan, a *PVD* reference, without demonstrating why one of ordinary skill in the art would have allegedly been *motivated* to modify EP 887110, a *chemical vapor deposition* reference, in view of a *physical vapor deposition* reference such as Chan. The test for non-obviousness is not whether it would be merely advantageous or possible to combine references but whether the prior art suggests the motivation to combine the references. "[T]he mere fact that the references can be combined or modified does not make the resultant combination obvious unless the prior art suggests the desirability of the combination". In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); See MPEP section 2143.01. Consequently, Applicants respectfully submit that the claims are not obvious because the Examiner has not demonstrated why one of ordinary skill in the art

would have been motivated to modify EP 887110, a *chemical vapor deposition* reference, in view of Chan, a *physical vapor deposition* reference. Nor has the Examiner demonstrated a reasonable expectation of success in *modifying* EP 887110, *chemical vapor deposition* reference, in view of Chan, a *physical vapor deposition* reference. In fact, the Examiner has not demonstrated *any* expectation of success in *modifying* EP 887110, a *chemical vapor deposition* reference, in view of Chan, a *physical vapor deposition* process.

The Chan PVD reference is non-analogous prior art and cannot be used to demonstrate a motivation to modify or any reasonable expectation of success.

Even assuming arguendo that the Examiner has established a prima facie case, one of ordinary skill in the art could not have been motivated to modify EP 887110 in view of Chan because a *chemical vapor deposition* (CVD) such as EP 887110 and a *physical vapor deposition* (PVD) such as Chan are *non-analogous prior art*. One of ordinary skill in the art is *only* presumed to be aware of analogous art. Analogous art is *only* art that is either in the field of technology of the claimed invention or deals with the same problem solved. In re Wood, 599 F.2d 1032, 202 USPQ 171 (CCPA 1979). The MPEP and case law both expressly do not allow non-analogous prior art to demonstrate obviousness.

In In re Pagliaro and In re Clay are just a sample of cases illustrating that *non-analogous prior art*, such as *chemical vapor deposition* versus *physical vapor deposition*, cannot be used to demonstrate obviousness. In re Pagliaro, 657 F.2d 1219, 210 USPQ 88 (CCPA 1981; In re Clay 966 F.2d 656, 23 USPQ2d 1058 (Fed. Cir. 1992).

As discussed above (on page 7), one skilled in the art would consider Chan, a *PVD* reference, and EP 87110, a *CVD* reference, to be *non-analogous* art for various reasons. In contrast to PDV which is generally understood as vaporizing either a solid or liquid target to produce a coating on a substrate wherein the coating has substantially the same composition as the target, a plasma enhanced *CVD* is generally understood as reacting a gaseous precursor in the presence of a plasma to deposit a coating on a

substrate wherein the coating does not have the same composition as the precursor.
(HANDBOOK OF DEPOSITION TECHNOLOGIES FOR FILM AND COATING Second Edition,
edited by Rointain F. Bunshah, Noyes Publications Westward, New Jersey 1994, p. 6-9).
(Chan '624 col. 1 line 20-45).

A PVD reference such as Chan is non analogous to CVD because it addresses issues irrelevant to CVD while failing to address issues that are relevant to CVD. An example of the Chan PVD reference addressing issues irrelevant to CVD is the following: much of the Chan *PVD* reference deals with the issue of macro-particles and how to space the plasma sources and magnetic confinement to collect these macro particles and prevent them from reaching a substrate. (Col 3, line 25-30, Col 2 line 3-9, etc.). In contrast, in a CVD process, these macro particles do not exist thereby making the teachings of the Chan PVD reference irrelevant and non-analogous. Consequently, because the Chan PVD are non analogous, the Chan PVD reference could not possibly provide any motivation or any expectation of success.

Conversely, examples of the Chan PVD reference failing to address issues relevant to CVD are the following: The Chan PVD reference fails to address the matching of the plasma density profile with the local activity of the precursor material e.g. octamethylcyclotetrasiloxane (D4) and the local activity of the reactant e.g. oxygen. If, for example, the oxygen level is too high, then the coating will be oxygen rich approaching SiO₂ rather than SiO_xCyO_z and not have good properties. Furthermore, if the plasma density is too low, incomplete oxidation and /or polymerization of the D4 will occur again leading to poor coating properties. Thus, because the Chan PVD reference fails to address various issues relevant to CVD, making it irrelevant and non-analogous, Chan PVD reference could not possibly provide any motivation or any expectation of success.

Consequently, applicants respectfully submit that claims 24-35 and claims 37-40 are not obvious over EP 887110 in view of the *non analogous* Chan *PVD* reference.

Lastly, applicants still maintain that since Chan shows plasma generators to be inside the vacuum chamber, the principal of operation if the expanding thermal plasma jet of the EP reference would be destroyed if the references were combined. Although the teaching of a reference considered as a whole, the inside versus outside is part of the reference and therefore must be considered. Applicants have offered the above grounds as further reasons, not replacement reasons, why applicants' invention is not obvious.

No Motivation to modify or reasonable expectation in modifying EP 887110 to comprise *multiple plasma sources* to increase *area* in view of Ackerman because EP 887110 fails to disclose *multiple plasma sources* and Ackerman fails to disclose increased *area* and *multiple plasma sources in more than one direction*.

The Examiner rejected claims 24-30 and 37-40 as allegedly obvious over EP 887110 in view of Ackerman (U.S. 5,062,508)

As discussed above, EP 887110 fails to disclose *multiple plasma sources*. Although Ackermann discloses a chemical vapor deposition, Ackerman fails to disclose coating *area* that is larger. The Examiner even admitted in both office actions that Ackerman merely discloses multiple plasma sources in *one direction* (horizontal/parallel), which only increase the *coating thickness*, not *area*, of a substrate. (11/4/2003 office Action page 6). In other words, if a substrate passes through multiple plasma sources lined up horizontally/parallel, it is mathematically impossible for the coating *area* to increase; only the coating thickness can increase. For *area* to increase, multiple plasma sources in more than one direction are needed. In this case, the Examiner has not demonstrated a motivation to modify Ackerman to comprise multiple plasma sources in more than one direction and nor has the Examiner demonstrated a motivation for success. Consequently, Applicants respectfully submit that claims 24-30 and 37-40 are not obvious over EP 887110 in view of Ackerman (U.S. 5,062,508).

Definiteness

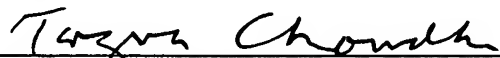
Applicants have amended claims 38-40 to reflect correct numerical dependency from appropriate claim, such as amending claim 40 to depend from 37 instead of claim 40. The amendments are expressly not for reasons related to patentability but to correct superficial clerical error. Furthermore, applicants have amended claim 38 and 40 to clarify any alleged indefiniteness to further prosecution, not for reasons related to patentability.

Alleged judicial double patenting

Applicants have submitted a terminal disclaimer over pending application 09/683,149, which takes care of any alleged judicial double patenting issues.

In light of the amendment and remarks presented herein, Applicant submits that the case is in condition for immediate allowance and respectfully requests such action. If, however, any issues remain unresolved, the Examiner is invited to telephone the Applicant's counsel at the number provided below.

Respectfully submitted,



Tanzina S. Chowdhury
Attorney for Applicant
Registration No. 46,624
Telephone: (518) 387-7166 or
(518) 387-7122

Schenectady, New York

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Date